Programme Specific Outcome: B.Sc. Honours (Chemistry)

The purpose of the undergraduate chemistry program is to provide the key knowledge base and laboratory resources to prepare students for careers as professionals in the field of chemistry.

Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries.

Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.

Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats.

Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.

Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.

Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.

Finally, they will be sufficiently trained to get employment in Govt. sector, non Govt. sector in chemical/ pharmaceutical industry and .other areas.

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Course Code	Course Name	Course Outcome
CEMHCC01	**C1T** **C1P** **Organic Chemistry**	Understanding about structure, bonding, stability, physical properties of organic molecules and reaction intermediates, MOT, aromaticity, and stereochemistry Learn the process to separate the components of binary solid mixture by using common laboratory reagents, determine the boiling point of organic liquids
CEMHCC02	**C2T** **C2P** **Physical Chemistry**	Learn about kinetic theory and gaseous state, develop the concept of various thermodynamic parameters and functions, laws thermodynamics, reaction kinetics, rate law, order and molecularity etc Learn to carry out experiments related to chemical thermodynamics and kinetics
CEMHCC03	**C3T** **C3P** **Inorganic Chemistry**	Knowledge about structure of atoms, chemical periodicity, concept of acid and base and concept of redox and precipitation reactions Learn about various types of titration methods such as acid-base and redox titration
CEMHCC04	**C4T** **C4P** **Organic Chemistry**	Learn the concept of acid-base, tautomerism, reaction kinetics, substitution reaction at saturated carbon, elimination reaction and axial chirality Learn how to perform chemical reactions like hydrolisys, diazotisation, bromonation etc
CEMHCC05	**C5T** **C5P** **Physical Chemistry**	Develop the concept of viscosity, conductance and chemical equilibrium, chemical potential, a brief knowledge about quantam mechanics Practical knowledge about partition co-efficient, conductometric titration, determination of Ka
CEMHCC06	**C6T** **C6P** **Inorganic Chemistry**	Knowledge about different types of bonds in molecules, MO diagram small molecules, weak chemical forces and radioactivity. Practical knowledge about the gravimetric estimation of metal ions
CEMHCC07	**C7T** **C7P** **Organic Chemistry**	Knowledge about the chemistry of alkene and alkynes, aromatic substitution, carbonyl chemistry and organometallic chemistry Practical idea about special elements (N, S and halogen), detection of functional group,
CEMHCC08	**C8T** **C8P** **Physical Chemistry**	Understanding about colligative property, Phase rule, binary solution, ionic equilibrium, electromotive force and quantum chemistry. Practical idea about potentiometric titration, phase diagram, pH metric titration, and determination of solubility product of sparingly soluble salt
CEMHCC09	**C9T** **C9P** **Inorganic Chemistry**	Concept of metallurgy, s, p block element, nobel gas, coordination chemistry and inorganic polymer. A practical idea about gravimetric estimation of metal ions, and preparation of complex compounds
CEMHCC10	**C10T** **C10P** **Organic Chemistry**	Knowledge about nitrogen containing compounds, rearrangement reaction, organic spectroscopy like IR, NMR, UV and retrosynthetic approach in organic synthesis Practical idea about estimation of biologically important compounds like glucose, sucrose, vit C etc.
CEMHCC11	**C11T** **C11P** **Inorganic Chemistry**	Knowledge about bonding, magnetic and spectral properties of coordination compounds, chemistry of d- and f- block elements (Lanthanoids and Actinoids) Carrying out gravimetry estimation of ions.
CEMHCC12	**C12T** **C12P** **Organic Chemistry**	Understanding structures, functions and preparative methods of carbohydrates, heterocyclic compounds, bio molecules and stereochemistry of cyclic compounds Learn procedure to carry out chromatographic separations of a mixture of selected organic compounds and identification of compounds by IR & 1H NMR methods.
CEMHCC13	**C13T** **C13P** **Inorganic**	Gain the knowledge of bioinorganic chemistry, organo-metalic chemistry and their application in our daily life, understanding of kinetics and mechanism of reactions of inorganic complexes/reactions and the role of catalysis

	Chemistry	Learn procedures to carry out qualitative semi-micro analysis of mixtures containing four radicals.
CEMHCC14	**C14T** **C14P** **Physical Chemistry**	Understanding of theory and important applications of Microwave, IR, Raman, UV, NMR, ES spectroscopy, photochemistry and surface related phenomena Learn experiments for determination of surface tension, pH, CMC and kinetic study of chemical reactions
CEMHSE01	**SEC1T** **SEC1P** **Pharmaceuti-cal chemistry**	Knowledge on the structure, chemistry and therapeutic value of drugs, synthesis and properties of some representative drugs (antiviral, antimicrobial, analgesic etc) Hands on experience on preparative methods and analysis of some drugs
CEMHSE02	**SEC2T** **SEC2P** **Pesticide chemistry**	Understanding of the chemical nature, formulation, toxicity and action etc. of different pesticides, insecticides, fungicides and herbicides and their uses Practical knowledge about the preparation of pesticides.
CEMHDS01	**DSE1T** **DSE1P** **Advanced Physical Chemistry**	Knowledge about crystal Structure, symmetry, statistical thermodynamics, specific heat of solid, adiabatic demagnetization, polymers A hand on experiment on developing computer programming for chemical equations
CEMHDS02	**DSE2T** **DSE2P** **Analytical Methods in Chemistry**	Understanding about the diverse qualitative and quantitative aspects of analysis, knowledge about various analytical techniques used for analysis and separation purpose optical methods of analysis, Thermal methods of analysis, electro analytical methods, separation techniques
CEMHDS03	**DSE3T** **DSE3P** **Green chemistry**	Understanding the Principles, methodologies and techniques in Green Chemistry, knowledge about the green route for chemical reaction for sustainable development
CEMHDS04	**DSE4T** **DSE4P** **Polymer Chemistry**	A detail concept about the history of polymeric materials, functionality and its importance, kinetics of polymerization, crystallization and crystallinity, nature and structure of polymers, Determination of molecular weight of polymers, Tg, Polymer Solution
CEMHGE01	**GE1T** **GE1P**	Conceptual idea about an atom, knowledge about periodic table, acid, base, redox reaction, fundamental of organic chemistry, aliphatic hydrocarbon, stereochemistry Detection of organic functional group. and gravimetric estimation of metal ions
CEMHGE02	**GE2T** **GE2P**	Knowledge about kinetic theory of gas and real gas, Property of liquids and solids, knowledge about reaction kinetics, bonding and molecular structure, p block elements Practical knowledge in determination of surface tension and viscosity of liquid
CEMHGE03	**GE3T** **GE3P**	Understanding of chemical energy, stability of a reaction, concept of ionic equilibrium, organometallics, alcohols, alkyl halide and carbonyl compounds A practical idea about determination of enthalpy, heat capacity, pH of various solutions
CEMHGE04	**GE4T** **GE4P**	Understanding about solution, phase equilibria, conductance and electromotive force, concept of environmental chemistry Practical learning about potentiometric titration, conductometric titration and detection critical solution temperature of binary solution mixture